REMARKS

Claim Objections

In the Office Action claims 4 and 5 were objected to because of various informalities. Claims 4 and 5 have been amended to make reference to the antecedent field unit and overcome this objection. In addition, claims 10 and 11 were amended to make reference to the antecedent field unit.

§ 102 Objections

In the Office Action Claims 1, 8-10, 12, 17-21, 25-27 and 29 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent 5,828,662 to Jalali, *et al.*, hereinafter "Jalali".

The Brief Description of the Cited Art

Jalali describes a synchronous discontinuous transmission medium access control (SDTX-MAC) scheme that may be used to efficiently share uplink channels between multiple terminals engaged in bursting data transmission in a wireless network. See Jalali, Abstract. According to the scheme, a mobile terminal registers with a base station by broadcasting an origination message on an uplink channel to the base station. The base station receives the origination message and broadcasts an assignment message to the mobile terminal wherein the assignment message contains a synchronous synchronization-reservation (SSR) channel assignment and an assigned time slot that the mobile terminal uses to communicate with the base station. The mobile terminal receives the assignment message and tunes its transmitter to the SSR channel. At this point the mobile station may transmit data to the base station. See Jalali, column 4, line 60 to column 5, line 10.

The mobile terminal transmits data by first transmitting a synchronization message to the base station. The base station receives the synchronization message, synchronizes to the mobile terminal using the preamble in the synchronization message and sends an acknowledgment to the mobile terminal. The acknowledgment contains a traffic channel and a send time (time slot) which the mobile terminal unit may use to transmit the data. The mobile terminal unit receives

the acknowledgement message, tunes its transmitter to the traffic channel and transmits the data to the base station at the assigned time on the traffic channel. See Jalali column 5, lines 11-52. Alternatively, the may use the assigned channel and time slot to broadcast a call termination message to the base station to terminate a call. See Jalali Fig. 3, and column 5, line 53 to column 6, line 13.

Brief Description of the Present Invention

The present invention relates to a technique for synchronizing communications between a base station and one or more field units. According to an aspect of the technique, a first channel is allocated to handle message transmissions from the base station to multiple field units. A second channel is allocated to handle message transmissions from the field units to the base station. Time slots are assigned to the first and second channels to enable multiple field units to transmit and receive messages on the channels. The time slots are allocated such that each field unit is assigned a time slot on the first channel to receive messages from the base station. In addition, each field unit is assigned a time slot on the second channel which the field unit uses to transmit messages to the base station. Synchronization is maintained between a field unit and the base station by analyzing a message received from the field unit and adjusting timing of the field unit by transmitting a feedback message to the field unit.

According to another aspect of the present invention, a field unit is assigned a time slot on a forward link that is used by the field unit to receive messages from the base station. Likewise, the field unit is assigned a time slot on a reverse link which is used by the field unit to transmit messages to the base station. Synchronization between the base station and the field unit is accomplished by adjusting the transmission of messages at the field unit such that each message transmitted by the field unit arrives at the base station in the time slot assigned to the field unit.

Differences Between the Cited Art and the Present Invention

The MPEP at § 2131.01 states that:

> "'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.'"

MPEP § 2131.01, quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Regarding Claims 1, 8-10, 12, 17-19, 25-27 and 29 representative claim 1 recites:

1. A method for supporting wireless communications, the method comprising the steps of:

allocating a first channel to support message transmissions from a base station to multiple field units;

allocating a second channel to support message transmissions from the field units to the base station;

assigning time slots in the first and second channel for message transmissions between the base station and field units; and

maintaining synchronization between a selected one of the field units and the base station by analyzing a message received in a time slot and ***adjusting timing of the selected one field unit by transmitting a feedback message to the selected field unit.***

The Applicants respectfully submit that Jalali does not inherently or explicitly describe the Applicants' claimed "***adjusting timing of the selected one field unit by transmitting a feedback message to the selected field unit.***"

In the Office Action, the Examiner seems to suggest that this aspect of the claimed invention is disclosed in Jalali at column 5, lines 53-65 and Figure 3. The Applicants respectfully disagree.

In this section and Figure 3, Jalali describes synchronizing communications between a terminal unit and a base station using a synchronization message sent to the base station by the terminal unit. Specifically, the terminal unit transmits a synchronization message to the base station to synchronize with the base station. The base station receives the synchronization message and uses the preamble of the message to synchronize with the terminal unit. This technique for synchronizing a terminal unit with a base station is quite different than the Applicants' claimed invention.

First, in Jalali the base station makes adjustments in order to accommodate synchronization between the base station and the terminal unit. The Applicants' claimed

invention, on the other hand, makes adjustments to accommodate synchronization between a base station and a field unit at the field unit.

Second, in Jalali, synchronization is performed at the base station using a preamble of a synchronization message sent by the terminal unit. In contrast, the Applicants' claimed invention uses (1) analyzes a message received from the field unit and (2) sends a feedback message to the field unit to adjust timing at the field unit in order to accommodate synchronization. Nowhere does Jalali teach or suggest using a feedback message to accommodate synchronization at the field unit. In fact, according to Jalali's scheme, sending a feedback message to a terminal unit in response, say, to the synchronization message sent from the terminal unit would not make sense, as any adjustment made to accommodate synchronization occurs at the base station and not the terminal unit.

Because of the absence of "***adjusting timing of the selected one field unit by transmitting a feedback message to the selected field unit***" in Jalali, the Applicants submit that Jalali does not render the Applicants' claims 1, 8-10, 12, 17-19, 25-27 and 29 anticipated under 35 U.S.C. § 102 and therefore requests that the rejection of these claims be withdrawn.

Regarding claims 20 and 21, representative claim 20 recites:

> 20. A method for synchronizing wireless communications between a base station and a field unit, the method comprising the steps of:
>
> assigning time slots of a forward link channel to each of a plurality of field units in which a base station transmits messages, each field unit determining messages directed to the field unit based upon receipt of a message in a particular time slot;
>
> assigning time slots in a reverse link channel in which the field units transmit messages to the base station, the base station identifying from which field unit transmitted a message based upon reception in a particular time slot;
>
> ***adjusting message transmissions from each field unit*** such that messages transmitted from the plurality of field units arrive at the base station in a corresponding time slot of the reverse link channel.

Applicants respectfully submit that Jalali fails to disclose the Applicants' claimed "***adjusting message transmissions from each field unit.***"

The Examiner seems to suggest that Jalali teaches this element at step 303 in Figure 3. The Applicants respectfully disagree.

In step 303 of Figure 3, Jalali clearly shows that the base station is making an adjustment based upon a synchronization message received from the mobile terminal. In sharp contrast, as noted above, the Applicants' claimed invention makes adjustments at the field unit and not the base station.

For reasons set forth above the Applicants respectfully submit that Jalali fails to anticipate claims 20 and 21 under 35 U.S.C. §102. Therefore the Applicants respectfully request that the above rejections to these claims be withdrawn.

§ 103 Rejections

In the Office Action claims 2-4 and 14 were rejected under 35 U.S.C. § 103 as being unpatentable over Jalali in view of U.S. Patent 6,188,903 to Gardner, *et al.,* hereinafter "Gardner," claims 5-7, 11, 13, 15 and 22-24 were rejected under 35 U.S.C. § 103 as being unpatentable over Jalali in view of U.S. Patent 5,537,397 to Abramson, hereinafter "Abramson" and claim 16 was rejected under 35 U.S.C. § 103 as being unpatentable over Jalali in view of U.S. Patent 6,396,823 to Park, *et al.,* hereinafter "Park."

Brief Description of the Additional Cited Art

Gardner describes a timesharing method for frequency reuse in cellular communication systems. The frequency reuse is enhanced by synchronizing cell transmit and received base stations in a cellular system to a common time base and then sharing the available frequencies via time slots. Cells using the same frequency they may interfere with each other or activated only during selected time intervals while same frequency cells nearby are deactivated. The deactivated cells are then, in turn, activated while previously activated same time cells nearby are deactivated. See Gardner, column 3, lines 15-25.

Abramson describes a technique where multiple signals from multiple transmitters, all of which use an identical code spreading sequence, are controlled by a pilot signal transmitted from a hub station. The multiple signals are detected at the output of a single matched filter in the hub station. The output of the filter is used to transmit a pilot control signal to all transmitters to advance or retard the timing of the multiple transmitters so that transmissions from all the transmitters are received at the hub station offset from each other by an integer number of chip times. See Abramson, column 5, lines 35-51.

Park describes a base station transceiver for a frequency hopping code division multiple access (CDMA) system. See Park, Title. The transceiver contains a forward signal path, a reverse signal path and a plurality of time division multiplexing switches. The time division multiplexing switches are switched between the forward signal path and the reverse signal path signal generated from a time division duplexing timing controller. Outputs of the time division duplexing switches are filtered then transmitted through two antennas. A junction coupler couples the output of odd-numbered time division multiplexing switches to a first antenna and the output of even-numbered time division multiplexing switches to a second antenna in an attempt to reduce mutual interference among channels. See Park, Abstract.

Differences Between the Cited Art and the Present Invention

The Applicants respectfully submit that Jalali, Gardner, Abramson and Park taken singly or in combination do not teach or suggest the Applicants' claimed "***adjusting of the selected one field unit by transmitting a feedback message to the selected field unit***" or "***adjusting message transmissions from each field unit.***"

As noted above Jalali fails to disclose these elements. Likewise, Gardner, Park, and Abramson fail to teach or suggest these elements. At best, Abramson describes multiple transmitters using identical spreading codes and a hub transmitting broadcasting timing control signals to retard or advance the timings of the individual transmitters to offset interleave signals. However, Abramson falls short of describing transmitting a feedback message for purposes of adjusting the timing of a field unit let alone adjusting message transmissions from each of the

plurality of transmitting field units. The adjustments taught by Abramson are made to maintain radio frequency (RF) carrier and/or modulation code phase synchronization and these occur at a lower data "chip" level (i.e., the "physical layer") whereas the adjustments made by the claimed invention occur at a higher "message" level of transmission so as to synchronize message transmission (i.e., at the "data link layer").

For reasons stated above, the Applicants respectfully submit that Jalali, Park, Abramson, and Garder taken either singly or in combination do not render claims 2-7, 11, 13-16 and 22-24 obvious under 35 U.S.C. § 103. Therefore, the Applicants respectfully request that the above objections to these claims be withdrawn.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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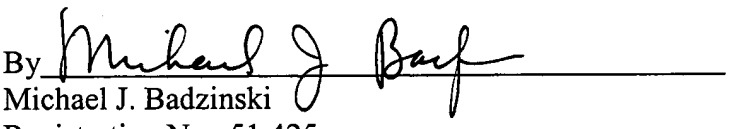
By 

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